



# International Journal of Research Publication and Reviews

Journal homepage: [www.ijrpr.com](http://www.ijrpr.com) ISSN 2582-7421

---

## Smart Hand Glove for Especially Abled People

Aniket A. Deshmukh<sup>1</sup>, Ajay S. Maurya<sup>2</sup>, Prof. Sachin M. Vaidya<sup>3</sup>

<sup>1,2</sup> Final Year Student MCA, Department of MCA, A.C. Patil College of Engineering, Navi Mumbai, Pin code: 410210, India

<sup>3</sup> Professor & HOD, Dept. MCA, A.C. Patil College of Engineering, Navi Mumbai, Pin code: 410210, India

---

### ABSTRACT

---

Technology is improving day by day and plays a vital role in improving the quality of life for people with special needs such as people who cannot see (blind), people who cannot hear (deaf), people who cannot speak (dumb) and people who are not mentally stable or any person with other disabilities. Challenges in communicating with these systems due to the lack of usability of technological devices. This work focuses on the importance of building an interface for special people who may not have the skills of a normal person. The purpose of doing this project is to help disabled people to live an easy life.

---

Keywords: Cyborg, Disability, Smart Hand Glove, Special people, Arduino Nano, Bluetooth.

---

### 1. INTRODUCTION

Cyborg and bionic systems (CBS) is attached hybrid fusion of organic and biomechatronic body elements, that integrates many artificial additives or generation like bio-hybrid actuators and sensors. It aims to create associate organisms improved or improved on the far side its distinctive biological characteristics. The organism is not the simplest thought of kinsfolk but in addition animals and a few different kinds of living creatures. In a mean example, a person with a synthetic pacemaker is taken into thought mutually of the CBS. Since such tool measures voltage potentials inside the body play signal process and provides electrical stimuli by the usage of feedback mechanism to keep up the person alive.

Disabilities: A disability could be a condition or performance judged to be considerably impaired relative to the normal standard of a private or group. Some common disabilities are:

Blindness: The physiological or neurologic aspects causing the condition of absence of visual sensitivity are visual disorders. Visual disorder characterizes numerous dimensions extended to explain the degree of vision loss. The residual vision visual disorder is commonly an exercise to explain the serious visual injury. Those having light perception comprise of no a lot of sight than the flexibility to enlighten light from dark and also the common route of a light source.

Deafness & Dumbness: The physiological or neurologic aspects inflicting the condition of absence of audio sensitivity is hearing loss and the condition of absence of audio generation is denseness or dumbness. People that are partially deaf can usually use hearing aids to help their hearing. The hearing disorder is often evident at birth or can occur later in life from many biological causes. Deaf & Dumb individuals use sign languages as a way of communication. So many sign languages are used around the world. In simple terms, sign languages are as made and complicated as any oral language, despite the common idea that they're not "real languages".

Physical or Mental Disorder: Any impairment that limits the physical performance of limbs or fine or gross motor ability could be a physical disability. A mental disorder or mental disease may be a psychological or activity pattern usually related to subjective distress or disability that happens in a person and is perceived by the bulk of society as being outside of traditional development or cultural expectations.

\* Corresponding author.

E-mail address: [aniket.deshmukh102@gmail.com](mailto:aniket.deshmukh102@gmail.com)

---

## 2. LITERATURE SURVEY

### Statistical report on people born with multiple disabilities [1]:

The statistical report on the basis of the 2011 census in India shows that 18.8% of people are born with blindness and 18.9% of people are born with hearing loss and 7.5% of people are dumb, these are the statistical report about the people who are born with single disabilities, but according to our concept the number of persons who were born with multiple disabilities that is the person born deaf- dumb and at the same time blind is about 7.9%, and our concept is suitable for this kind of people born with multiple disabilities.

### A Leap from Fiction to Reality [2]:

Cybernetic organisms, a combination of humans and machines have already entered everyday life, the military, popular culture, and other fields since the emergence of cyborg research and studies in the mid-1980s. In the late 1950s, a white lab was the world's first cyborg. It was part of experimental research at New York's Rockland State Hospital. The rat was inserted with a tiny osmotic pump that injected doses of chemicals, modifying several of its physiological parameters. In 1960, The Rockland rat is mentioned in a paper called "Cyborgs and Space," written by Manfred Clynes and Nathan Kline. In 2010, the Cyborg Foundation became the world's first international organization serving to help humans become cyborgs. The foundation was created by cyborg Neil Harbisson and Moon Ribas to the growing number of letters and emails received from people around the world interested in becoming a cyborg. The foundation's main aims are to extend human abilities by developing and applying cybernetic implants to the body, to evaluate the use of cybernetics in cultural events, and to stand for cyborg rights. Cyborg technology is most immediately useful for disabled people. In the future, we might imagine a world where every disabled person is equipped with new robotic limbs that are connected to their nervous systems, useful just like normal limbs.

### Smart Glove for Remote Monitoring of Rheumatoid Arthritis Patients (IoT) [3]:

A Smart Glove system for helping elderly people at home suffering from joints movement disability. The main objective is to design, implement and test a device for remotely monitoring hand and fingers movements. The microcontroller allows the control of the activity of the Smart Glove is an easy and effective way. The rule for observing the state of the patient's palm and alerting the physiotherapist if an error or an abnormality has occurred. The Smart Glove sensor readings as shown in the Smart Phone of the therapist for remote monitoring of the patient's hand joint movements. The glove has been synthesized from normal stretched clothe and the sensors were glued on this layer. Another nylon layer covers and protects the sensors. The flex and force sensors were calibrated based on instructions provided in the datasheet.

### Gesture Control Smart System for Deaf and Dumb People [4]:

Sign language is used by deaf and mute people and it is a communication skill that uses gestures instead of sound to convey meaning simultaneously combining hand shapes, orientation and movement of hands, arms or body, and facial expressions to express fluidly a speaker's thoughts. But most of the time normal people find it difficult to understand this sign language. Six flex sensors were attached on the thumb, index, middle, ring, pinky fingers and the palm of a glove in order to measure the bent of the fingers and the clench of the hand then accelerometer and the gyroscope was placed on the back of the hand in order to determine the position and movement of the hand on space.

---

## 3. PROPOSED SYSTEM

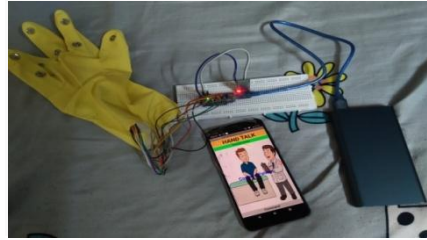
### 3.1 Objective:

- Better comfort and stress-free communication over Traditional gestures communication.
- The system will prove beneficial for dumb people and also provide them with the optimum environment in their home space.
- The Objective of this project is to implement a low-cost, reliable, and scalable Hand Talk Glove system that can be used wirelessly to communicate with other persons, for ease of communication.

### 3.2 Project Description:

Our project aims to solve the daily challenges faced by people, who are unable to speak (dumb) or one who has recently underg one an accident and is unable to speak. It can also be used by elderly people, who find difficulty in speaking.

Solves the issues of those people, who cannot learn or are unable to use 'sign language' to communicate with others by providing them a 'virtual voice. This wearable glove is both affordable and feasible. It is easy to wear and customizable according to one's needs. Can be used by people of any age group and also illiterate.



**Fig.1. Smart Hand Talk Glove**

With this wearable smart glove, dumb people or patients can easily communicate by just tapping the points on the glove by their thumb that results in 8 different commands that are both audible audio and image on any Android Smartphone via an app.

### 3.3 Project Material:

- **Arduino Nano Board:**

Arduino Nano is a small, compatible, flexible, and breadboard-friendly Microcontroller board, developed by Arduino. cc in Italy, based on ATmega328p ( Arduino Nano V3.x) / Atmega168 (Arduino Nano V3.x). Arduino Nano is simply a smaller version of Arduino UNO, thus both have almost the same functionalities. It comes with an operating voltage of 5V.

- **Bluetooth Module:**

HC-05 Bluetooth Module is an easy-to-use Bluetooth SPP (Serial Port Protocol) module, designed for a transparent wireless serial connection setup. Its communication is via serial communication which makes an easy way to interface with the controller or PC. HC-05 Bluetooth module provides switching mode between master and slave mode which means it is able to use neither receiving nor transmitting data.

- **Jumper Wires:**

Jumper wires are used for making connections between items on your breadboard and your Arduino's header pins. Use them to wire up all your circuits.

- **Breadboard:**

A breadboard is a way of constructing electronics without having to use a soldering iron. Components are pushed into the sockets on the breadboard and then extra 'jumper' wires are used to make connections.

---

## 4. CONCLUSION

This wearable glove is both affordable and feasible. It is easy to wear and customizable according to an individual's needs. Can be used by people of any age group. The assistive aid that was developed resulted in providing a user-friendly approach to speech-impaired people. The user-dependent system will provide accuracy. This system helps the speech impaired people to express their needs and announce their requirements. This reduces the dependency of the physically challenged individuals on others, thereby empowering them and creating them independent for meeting their basic desires. Solves the issues of those people, who cannot learn or are unable to use 'sign language' to communicate with others by providing them a 'virtual voice'.

In this paper, we began our conversation with the aim that Technology is used for developing a user-friendly system to help disabled people. This kind of technology reduces the dependency of physically challenged people on others, thereby empowering them and making them independent for meeting their basic needs. This system helps the speech impaired people to express their needs and announce their requirements.

---

## REFERENCE

- [1] Venkatesan G.1, Monisha D.2, Komathi G.3, Narmadha J.4 "Communication of the Person Who Was Born Deaf-Dumb and At the Same Time Blind, With Others through Smartphone Case Study", ISSN, June 2017.
- [2] Kaustubh Prakash Keer, Shakir Shahed Khan, "Cyborgs, A Leap from Fiction to Reality", ISSN, April 2018.
- [3] M. Raad, M. Deriche, A. Bin Hafeedh, H. Almasawa, K. Bin Jofan, H. Alsakkaf, A. Bahumran and M. Salem, "An IOT based Wearable Smart Glove for Remote Monitoring of Rheumatoid Arthritis Patients", ISBN (BIOSTEC 2019).
- [4] Dhawal L. Patel, Harshal S. Tapase, Praful A. Landge, Parmeshwar P. More, Prof. A. P. Bagade, "SMART HAND GLOVES FOR DISABLE PEOPLE", IRJET, April 2018.

- [5] K. V. Fale, Akshay Phalke, Pratik Chaudhari, Pradeep Jadhav. "Smart Glove: Gesture Vocalizer for Deaf and Dumb People". International Journal of Innovative Research in Computer and Communication Engineering, Vol. 4, Issue 4, April 2016.
- [6] G R Meghana , Harshitha H S, L Shyla , Madan Kumar S M, "GLOVE BASED SIGN LANGUAGE INTERPRETER FOR DEAF AND APHONIC PEOPLES", IRJET, June 2020.
- [7] What is a Cyborg? "; CyborgAnthropology.com; 18 Mar. 2012. | [http://cyborganthropology.com/What\\_is\\_a\\_Cyborg%3F](http://cyborganthropology.com/What_is_a_Cyborg%3F)
- [8] [https://en.wikipedia.org/wiki/Cyborg\\_Foundation](https://en.wikipedia.org/wiki/Cyborg_Foundation)
- [9] <https://www.exploringarduino.com/parts/jumper-wires/>
- [10] <https://www.arduino.cc/en/pmwiki.php?n=Main/arduinoBoardNano>
- [11] <https://learn.adafruit.com/lesson-0-getting-started/breadboard>
-